Patent claims:

1. Method for increasing the driving stability of a motor
    vehicle during braking, in which compensation steering
    angles for an open-loop and/or closed-loop controlled
    steering system are calculated from several input
    parameters, so that the driving stability of the motor
    vehicle is increased by steering interventions,
    characterized in that in the steering interventions an
    interference compensation portion is considered for the
    compensation steering angles calculated from the course
    (driving condition) of the vehicle.

2. Method according to claim 1, **characterized** by the steps
    of
    determination of a first interference compensation
    portion of the compensating steering angle demand $\boxed{\Delta\delta}$
    taking into consideration brake force differences on
    the braked wheels,
    determination of a second interference compensation
    portion from the (driving condition) course of the
    motor vehicle and modification of the steering angle
    depending on interference compensation portions.

3. Method according to claim 1 or 2, **characterized in that**
    the second compensation portion is calculated in a
    device including a reference vehicle model circuit in
    which the input parameters necessary for defining the
    course, such as vehicle speed, steering angle, and - if
    necessary - friction coefficient, are introduced, which
    due to a vehicle model being built in the reference
    vehicle model circuit and simulating the
    characteristics of a vehicle defines a nominal value
    for a controlled quantity and in which this nominal

value is compared with a measured value for this controlled quantity in a comparative unit, calculating the second compensation portion of the steering angle $\Delta\delta_R$ on the basis of the comparative value (controlled quantity).

4. Method according to clam 3, **characterized in that** the yaw angle speed and/or the lateral acceleration and/or the floating angle are defined as nominal value for the controlled quantity.

5. Method according to any one of claims 1 to 4, **characterized in that** the first compensation portion $\Delta\delta_Z$ is determined taking into consideration an interference yaw torque M_z calculated from different brake forces and the second portion $\Delta\delta_R$ is determined taking into consideration the vehicle yaw behavior.

6. Method according to any one of the claims 1 to 5, **characterized in that** the first compensation portion is considered as open-loop control portion and the second compensation portion is considered as control-loop control portion.

7. Method according to any one of the claims 1 or 6, **characterized in that** the interference yaw torque M_z is calculated from a logical operation of a steering lock angle of the steered wheels, the brake forces and the rotation behavior of the wheels.

8. Method according to claim 7, **characterized in that** the brake forces are calculated from the brake pressures on the basis of the relation

$$\hat{F}_{x,i} = f\{r, B, p_i, J_{Whl}, \dot{\omega}_i\}$$

with

$\hat{F}_{x,i}$ = *Brake force on one wheel i*

r = *dynamic wheel radius*

B = *Brake parameter*

p_i = *Wheel brake pressure*

J_{Whl} = *Moment of inertia of the wheel*

$\dot{\omega}_i$ = *Rotation acceleration of a wheel i*

or

$$\hat{F}_{x,i} = f\{r, B, p_i\}$$.

9.   Method according to claim 8, **characterized in that** the interference yaw torque is calculated on the basis of the relation

$$\hat{M}_z = f\{\hat{F}_{FL}, s_{FL}, \hat{F}_{FR}, s_{FR}, l_F, \hat{F}_{RL}, s_{RL}, \hat{F}_{RR}, s_{RR}, \delta\}$$

with

$\hat{F}_{FL}$ = *Brake force on the front at the left*

s_{FL} = *half the tread of the left front wheel*

$\hat{F}_{FR}$ = *Brake force on the front at the right*

s_{FR} = *half the tread of the right front wheel*

l_F = *Dis* tan *ce between front axle and center of gravity*

$\hat{F}_{RL}$ = *Brake force on the rear at the left*

s_{RL} = *half the tread of the left rear wheel*

$\hat{F}_{RR}$ = *Brake force on the rear at the right*

s_{RR} = *half the tread of the right rear wheel*

δ = *Wheel steering lock of the steered wheels*

10.   Method according to any one of the claims 1 to 9, **characterized in that** the compensation gains K_{FFW} of the single fed back controlled quantities are adapted depending on the driving behavior of the vehicle and possibly the environmental conditions.

11. Method according to any one of the claims 1 to 10, **characterized in that** the second compensation portion $\Delta\delta_R$ of the steering angle demand $\Delta\delta$ is calculated from a P portion $\Delta\delta_{R,P}$ based on the yaw rate deviation $\Delta\dot{\psi}$ and a D portion $\Delta\delta_{R,D}$ based on a yaw acceleration deviation $\Delta\ddot{\psi}$.

12. Method according to any one of the claims 1 to 11, **characterized in that** the P portion is calculated according to the relation
$$\Delta\delta_{R,P} = K_{FB,P}(v) * \Delta\dot{\psi} .$$

13. Method according to any one of the claims 10 to 12, **characterized in that** the gain factor $K_{FB,P}(v)$ for the feedback of the controlled quantity of the yaw rate deviation $\Delta\dot{\psi}$ depends on the vehicle speed.

14. Method according to any one of the claims 1 to 13, **characterized in that** the D portion is calculated according to the relation
$$\delta_{R,D} = K_{FB,D}(v) * \Delta\ddot{\psi} .$$

15. Method according to any one of the claims 1 to 14, **characterized in that** the gain factor $K_{FB,D}(v)$ for the feedback of the controlled quantity yaw acceleration deviation $\Delta\ddot{\psi}$ depends on the vehicle speed v.

16. ABS control method in which a yaw behavior resulting from brake actuations with different brake pressures or forces on the single wheels which is defined from the determined brake force difference is at least in part

compensated by the intervention in a controlled or regulated steering system, **characterized** by a method according to the claims 1 to 15.

17. ABS control method according to claim 16, **characterized in that** a driving condition is determined by means of a yaw behavior resulting from different braking pressures or forces and admitting steering interventions, if at least the following conditions are satisfied with recognized straight-forward driving or cornering:
a) stop light switch signal present and
b) stop light switch sensor in working order and
c) brake actuation by the driver recognized by means of the TMC pressure and
d) driving straight forward is recognized.

18. ABS control method according to claim 16 or 17, **characterized in that** at least one of the following conditions is satisfied if it is recognized that the vehicle is driving straight forward:
e1) if one front wheel is controlled by the ABS system for a certain period of time and the other front wheel is not controlled by the ABS system or
e2) if both front wheels are in the first ABS cycle and the pressure difference on the front axle exceeds a limit value or
e3) if both front wheels for a certain period of time are controlled by the ABS system and at least one front wheel shows a certain minimum ABS blocking pressure and one blocking pressure exceeds the blocking pressure of the other wheel by more than a limit value.

19. ABS control method according to claim 16 or 17, **characterized in that** at least one of the following

conditions is satisfied if it is recognized that the vehicle is cornering:

e1) the curve outer front wheel is controlled by the ABS system before the curve inner wheel or

if for a certain period of time

e2) both front wheels are controlled by the ABS system and at least one front wheel shows a certain minimum ABS blocking pressure and the blocking pressure of the curve inner wheel exceeds the blocking pressure of the curve outer wheel by more than a certain limit value.

20. ABS control method according to any one of the claims 16 to 19 **characterized in that** at least one of the following requirements must be satisfied in order to finish the steering interventions:

a) no front wheel is controlled by the ABS system or

b) there are no stop light switch signals or

c) the stop light switch sensor is defective or

d) the brake actuation by the driver is not recognized (no TMC pressure).

21. ABS brake pressure control with single-wheel control on at least one vehicle axle in which due to a different friction coefficient on the two vehicle sides a yaw behavior occurring with the ABS control is compensated at least in part by that a compensation steering angle is calculated and superimposed on the vehicle steering angle preferably by using the methods according to any one of the claims 1 to 20, **characterized** by the steps of

admitting high pressure build-up gradients on the wheel with a high friction coefficient

admitting pressure differences on the rear axle according to the relation $\Delta p_{HA} = f(\psi, \delta_{Whl}, v, a_y)$. .

22. ABS brake pressure control according to claim 21, **characterized in that** the traditional ABS control strategy is used if the controlled or regulated steering system fails.

23. Driving dynamic controller with at least an ESP and an ABS function being connected to a controller and/or a control for correcting the steering, **characterized** by a first determination unit for determining the steering angle required by the driver,

    a second determination unit for determining an interference compensation steering angle on the basis of brake forces,

    a third device for determining an interference compensation steering angle on the basis of the vehicle yaw behavior, and

    a logic unit for linking the first and the second interference compensation steering angle with a compensation steering angle demand.